Appendix I – Selecting the DMA and Monitoring Indicators

SELECTING THE DESIGNATED MONITORING AREA (DMA) AND MONITORING INDICATORS TO ASSESS STREAM/RIPARIAN GRAZING

1. The DMA should be established appropriate to the monitoring indicators as described in Appendix J.

2. It should be representative of grazing use specific to the riparian area being assessed.

3. It should not reflect an "average" amount of use in all riparian areas of the stream reaches in the pasture but rather reflect livestock use in only those stream reaches where livestock are actually using riparian areas.

4. Select from those areas that are most critical in influencing fish species and where those areas overlap with grazing use –
   a. Listed fish habitat?
   b. Spawning habitat?
   c. Critical over wintering or rearing habitat?

5. Avoid areas where the impacts to fish species are compounded by other activity types or by non-USFS or BLM livestock grazing activities.

6. Premise: "If proper management occurs on the area, the remainder of the pasture or use area will also be managed within requirements."

7. Avoid sites that are impervious to disturbance (e.g. rock-armored channels) or those intentionally established for concentrated use (e.g. water gaps).

8. Select DMAs in an interdisciplinary fashion, including specialists knowledgeable in fish habitat requirements, channel processes, riparian vegetation, and livestock grazing.

Interdisciplinary DMA Selection Procedure

Monitoring must be conducted within the same Riparian Complex (Winward 2000). Riparian complexes are defined by overall geomorphology, substrate characteristics, stream gradient, and vegetation patterns along the stream. They develop and function in response to interacting features of valley bottom gradient, substrate or soil characteristics, valley bottom width, elevation, and climate. Once the Riparian Complex is defined, the DMA should be located by an ID Team to "best represent influences of major activities in that complex" (Winward 2000).

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Step 1. Define the Riparian Complex(s) within the pasture

Obtain information on the stream within the pasture in the office using USGS topographic map(s), aerial photo(s), and soils or landtype inventories.

a. Graph the stream profile – note average grades and breaks – classify the stream gradient type using Rosgen's criteria (Appendix I).
b. Evaluate valley width, noting any abrupt changes within the pasture. Classify the Valley Type using Rosgen's Valley Morphology classification.
c. Determine the dominant soil family type from the Soils Inventory or Landtype maps, noting key substrate characteristics – texture, potential vegetation, flooding, etc.
d. Evaluate vegetation patterns along the stream noting key groupings of woody types and herbaceous types where possible from the photos.
e. Map the Riparian Complexes within the pasture based upon changes in Stream Gradient Type, Valley Type, and/or Dominant Soil Families.

Step 2. Define the appropriate monitoring indicators for the Riparian Complex

a) Use the outline in Appendix 2 to select the monitoring indicators appropriate to the Stream Gradient type and vegetation cover type in the riparian complex

Step 3. Locate the Designated Monitoring Area and transect in the field

b) Walk through the Riparian Complex in the pasture to be monitored.

c) Validate the mapped Riparian Complex and adjust descriptions as necessary

d) Evaluate grazing use along and adjacent to the stream. Note where use occurs and the types of use – herbaceous and/or woody browse

e) Select a monitoring reach typical of the grazing use and that overlaps any critical aquatic habitat – spawning and/or early rearing reaches, etc.

a. Make sure it does not include a cattle crossing or local point of concentration
b. The starting point for the transect may be randomly selected by going to the downstream end of the reach, selecting a random number between 1 and 10, and then pacing-off that number of steps upstream.
c. At the starting point place a stake adjacent to the stream and well back from the edges of any cutbanks. The stake should be located above the bankful elevation of the stream.
d. Place a stake to demark the ending point of the transect across the stream from the starting point (the transect will proceed upstream from the starting point a distance of at least 363 feet, cross the stream and proceed from that point downstream to a stake located across the stream from the starting point).
e. Place stakes on each bank at the upstream end of the reach to define the transect extent.
f. If multiple channels are encountered, the current, most active channel should be followed. Do not sample streambanks on islands in the stream.

Appendix I – Selecting the DMA and Monitoring Indicators

A. Channel Type descriptions (Rogen 1996, p. 4-5).

Channel type	Description	Entrench-ment ratio	W/D ratio	Sinuosity	Slope	Landform
C	Low gradient, meandering, point-bar, riffle/pool, alluvial channels	> 2.2	>12	>1.4	<.02	Broad valleys with terraces. Well defined meandering channels
E	Low gradient, meandering riffle/pool stream with low width/depth ratio and little deposition.	>2.2	<12	>1.5	<.02	Broad valley/meadows. Alluvial materials with floodplains. Highly sinuous. Very low width/depth ratio.
F	Entrenched meandering riffle/pool channel on low gradients with high width/depth ratio	<1.4	>12	>1.4	<.02	Entrenched in highly weathered material. Gentle gradients with high bank erosion rates.
G	Entrenched "gully" step/pool and low width/depth ratio on moderate gradients	<1.4	<12	>1.2	.02 to .039	Gullies, step/pool morphology. Narrow valleys or deeply incised in alluvial or colluvial materials. Unstable with high bank erosion rate.
B	Moderatly entrenched, moderate gradient, riffle dominated channel, with infrequently spaced pools.	1.4 to 2.2	>12	>1.2	.02 to .039	Moderate relief, colluvial deposition, and/or structural. Narrow, gently sloping valleys.
A	Steep, entrenched, cascading, step-pool streams. Very stable if bedrock or boulder dominated.	<1.4	<12	1.0 to 1.2	.04 to .10	High relief. Erosional or depositional and bedrock forms. Entrneched and confined streams with cascading reaches.

B. Valley Morphology Types (Rosgen 1996, pages 4-12 to4-20)

Valley Type	Shape	Channel Types represented	Valley Slope %	Typical substrate	Landforms
II	Broad V-shape or narrow u-shape in colluvial valleys	"B"	<4%	Cobble and boulder from alluvium and colluvium	Cryoplanated uplands with colluvial slopes. – in narrow valley
III	Broad V-shape filled with alluvial fans and debris cones	"A", "B", "G", and "D"	>2%	Cobble and boulder	Colluvial and alluvial side-slope fans in the v-shaped valley
IV	V-shaped confined in entrenched canyon	"F" and "C"	<2%	Sand to Cobble	Entrenched meanders (gorges) in confined alluvial valleys
V	Wide, u-shaped valley	"C", "D", and "G"	<4%	Sand to cobble	Moraines, terraces, and floodplains in wide, u-shaped valley
VI	Broad V-shape or narrow U-shape	"B"	<4%	Sand to cobble	Fault-line valley with steeper slopes on one side of the valley
VIII	Wide, flat valley shape	"C" and "E"	<2%	Sand to cobble	Alluvial terraces and floodplains in broad valley
IX	Wide, flat	"C" and "D"	<2%	Sand to gravel	Glacial outwash plain
X	Very wide, flat plain	"C", "E", and "DA" with "G" and "F"	<2%	Sand to gravel	Broad lacustrine and alluvial flats
XI	Broad, flat to lobate shapes	"DA", "D", "C", and "E"	<2%	Sand to gravel	River deltas, tidal flats.